

ATOMIC ENERGY *newsletter*®

A SERVICE FOR INDUSTRY BUSINESS ENGINEERING AND RESEARCH
ROBERT M. SHERMAN, EDITOR. PUBLISHED BI-WEEKLY BY ATOMIC ENERGY NEWS CO., 1000 SIXTH AVENUE, NEW YORK 18, N. Y.

Dear Sir:

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Use of controlled nuclear explosions to propel space vehicles is to be investigated by General Atomic division of General Dynamics Corp., San Diego, Calif., under a feasibility study contract awarded the firm by the U.S. Air Force's Research & Development Command. It is one of a series of investigations underway in the U.S. involving new means of propulsion for space applications. As proposed by General Atomic, it looks to the use of controlled nuclear detonations within the atmosphere and beyond. Initial commitment for this study calls for the expenditure of \$1 million during fiscal 1959. Continuation of the program will be based upon results of the study during the initial phase. (Other CONTRACTS AWARDED, BIDS ASKED, p. 3 this LETTER.)

New French company has been formed by Catalytic Construction Co., Phila., and French partners to make available in Europe an organization qualified in the engineering, procurement and construction of plants for the atomic energy, chemical, petroleum and petrochemical industries. The new firm, known as Compagnie Francais d'Etudes et de Construction (TECHNIP), is made up of Catalytic and its partners: Commissariat a l'Energie Atomique, Institut Francais du Petrole, and Societe Nationale des Petroles d'Aquitaine. Offices are at 4, Ave. du Bois-Preau, Rueil-Malmaison (S&O). (Other BUSINESS NEWS, p. 2 this LETTER.)

Experimental extraction of uranium sulfate with the help of dodecylphosphoric acid has shown encouraging results according to Dr. L. Selmi and Dr. A. Fussi of SOMIREM (San Donato Milanese) who conducted the work. The work of the two was on uranium-bearing minerals found in the Maritime Alps district in the region of Cuneo. (Other RAW MATERIALS NEWS, p. 2 this LETTER.)

Sale of a 40 MEV linear accelerator has been made by Applied Radiation Corp., Walnut Creek, Calif.; the machine will be installed at Yale University's accelerator laboratory in Pierson-Sage Square at New Haven. Costing more than \$1 million, the high energy apparatus will be financed by the USAEC. (Other MANUFACTURERS' NEWS, p. 4 this LETTER.)

Production of nuclear reactor fuel elements will be started by National Lead Co., this Fall at its Magnus Metal division in Albany, N.Y. A section of the Magnus plant will be used by National's Nuclear Metals divisions. Equipment for machining, casting and rolling is being moved to Albany from National's Indianapolis plant. (Other PRODUCT, PROCESS, INSTRUMENT NEWS, p. 4 this LETTER.)

Agreement for joint program of research and experiments starting July 1st, 1958 using Norway's 10 megawatt Halden experimental boiling water reactor has been signed at Oslo by representatives of a number of European countries and Euratom. Representatives from Austria; Danish Atomic Energy Commission; the Euratom Commission (on behalf of the six countries, members of the European Atomic Energy Community); A. B. Atomenergi of Sweden; Switzerland; and the U.K. Atomic Energy Authority will join with Norwegian Institutt for Atomenergi (builders and owners of the reactor) in carrying out the joint program over a three year period starting July 1st.

ATOMIC ENERGY BUSINESS NEWS...

INTERNATIONAL AGREEMENT BETWEEN U.S. & EURATOM AWAITS APPROVAL:- Now under consideration by Congress is the International Agreement between U.S. and Euratom; President Eisenhower has urged approval in the hope that Euratom may look to U.S. for help and equipment. At stake is the supplying of the Euratom program for construction of approximately six large scale power reactors with a total capacity of 1 million electrical kw by 1963 in the six Euratom countries: France, W. Germany, Italy, Belgium, Holland, and Luxembourg. There is also a parallel five year, \$100 million research and development program. To finance the project, Euratom is committed up to \$215 million, with the Export-Import Bank providing up to \$135 million additional in long-term credits to Euratom which will reloan the funds for construction. The U.S. will guarantee a 20-year supply of fuel estimated at 30,000 kg of slightly enriched uranium which Euratom may buy at \$11 to \$12 per gram; payment for this may be deferred until 1973, with annual interest payable at 4%. The U.S. also agrees to buy back plutonium produced, at same price the uranium is sold, namely, \$11 to \$12 per gram. Euratom has agreed to safeguard plutonium from being diverted to weapons manufacture under system acceptable to U.S. An appropriation of \$50 million would be made by the U.S. to defray its share of Euratom's research and development program. (Other cooperative foreign projects are now under discussion by the U. S. with OEEC and its European Nuclear Energy Agency. Still under consideration by the USAEC is the Asian Nuclear Center, for Manila, P.I., which saw conceptual work some two years ago. While originally a \$20 million project, it has been reduced to \$10 million because of reluctance of some Far Eastern countries to participate.)

CONSTRUCTION STARTS ON FUELS TECHNOLOGY CENTER:- Ground breaking ceremonies last fortnight at Argonne National Laboratory's site near Lemont, Ill., marked start of work on \$10 million facility for metallurgical research on plutonium. New center will permit expanded effort by Argonne people on development of technology to enable use of plutonium as nuclear reactor fuel, including the fabrication of fuel elements of various sizes and shapes for nuclear reactors. (Singmaster & Breyer, N.Y., are architect-engineers for the project. Sub-structure, site work and underground services are being done by Darin & Armstrong, Inc., Detroit, on low bid of \$552,539.)

PUERTO RICO NUCLEAR CENTER CONTRACTS LET:- First work on the new Puerto Rico Nuclear Center, at Mayaguez, P.R., will shortly get under way. Fixed price contract in amount of \$1,266,295 for construction work there has been awarded by the USAEC to Southern Construction Co., Augusta, Ga., and letter contract for \$1,050,000 has been signed by the Commission with AMF Atomics, Greenwich, Conn., for pool-type training and research reactor for the Center. Some \$3.5 million has been allocated by the USAEC for the Center, which was established by the Commission in October, 1957. (A proposal has been made to the USAEC by the Puerto Rico Water Resources Authority for construction of a 15,000 kw boiling water power reactor to cost \$11 million and to feed electricity into the Puerto Rican power system. Under the proposal, the USAEC is to supply the major share of the funds for the reactor, including research and development costs. A feature of the reactor, designed by the General Nuclear Engineering Corp., Dunedin, Fla., is the possible use of nuclear superheat; research and development costs on this would also be borne by the USAEC.)

RAW MATERIALS...prospecting, mining, marketing...

UNITED STATES:- Pre-World War II market in uranium for industrial uses, which was about 200 tons per year, will now be allowed to function normally with the removal by the USAEC of restrictions on non-nuclear uses of uranium, and its placing on sale from its stocks depleted uranium. The restrictions have been removed by amendment of the Commission's source material regulation, as published in the Federal Register of June 28, 1958. The depleted uranium which the Commission will sell had been available previously only on a classified basis; it will now be sold from the Paducah, Ky., USAEC facility at prices ranging from \$5.00 to \$38.15 per kg depending on weight assay. Such depleted uranium contains less than the 0.7% by weight of uranium-235 present in natural uranium.

CANADA:- Construction is to be started immediately on the thorium recovery plant of Rio Tinto Dow, Ltd., adjacent the Quirke Lake uranium concentrating plant of Algom Uranium Mines, Near Elliot Lake. To cost approximately \$1 million, it will provide crude thorium concentrates and refined metallurgical grade thorium sulphate and oxide from solutions currently discarded as waste from the uranium recovery process.

ATOMIC ENERGY CONTRACTS AWARDED & BIDS ASKED...

BIDS ASKED:- Bids have been asked by the USAEC's Idaho Falls, Idaho office on the next stage of construction at the USAEC's National Reactor Testing Station, Idaho Falls, in connection with the Experimental Breeder Reactor-II facility there. The job, costing an estimated \$3 million, plus installation of more than \$2 million worth of Government-furnished equipment, and under invitation No. AT(10-1)-966, covers construction of a power plant and cooling tower and completion of the EBR-II reactor plant building at the Station. (EBR-II will be an unmoderated and liquid metal-cooled reactor with a thermal output of 62,500 kw and an electrical capacity of 20,000 kw. To be operated for the USAEC by Argonne National Laboratory, it will use full-size components in a sodium coolant system; it is hoped to obtain from operation of the reactor much practical operating information.)

Bids have also been asked by the USAEC's Idaho Falls office for operation at the Idaho Testing Station of the Argonne Low Power Reactor (ALPR). The plant, now under construction and expected to be in operation this Summer, includes a low-power heterogeneous boiling water reactor with an output of 200 electrical kw and 1.3 million BTU/hr for space heating purposes. It is a prototype of nuclear power plants for use at remote military installations. Successful bidder for the job (which includes operating the facility, doing research and development work, and assisting training activities of an Army group) will receive cost-plus-fixed-fee contract, starting about Dec. 31, 1958. Meanwhile, Argonne National Laboratory, which developed the reactor, will bring it to criticality this month and continue its operation until the end of this year.

PROPOSALS MADE:- Accepted by the USAEC for contract negotiations was proposal made by Curtiss-Wright Corp., Princeton, N.J., for construction and test operation of the High Intensity Food Irradiator at the Army's Ionizing Radiation Center, Sharpe General Depot, Lathrop, Calif. C-W intends to engage Ralph M. Parsons Co., Los Angeles, as a major subcontractor. Some 15 proposals were received by the USAEC in response to its invitation of April 1, 1958. When the project is completed (scheduled date is mid-1960 at cost of about \$2 million) it will be turned over to the Army's Quartermaster Corps for use in large-scale food preservation. It will use as radiation source 2 million curies of cobalt-60, to be produced in Savannah River Plant reactors at Aiken, S.C. (Initial plans were to use nuclear reactor as radiation source; cobalt-60 use was deemed of greater utility, and more economical.)

CONTRACTS AWARDED:- Bureau of Ships, U. S. Navy, contract in amount of \$11,926,000 has been awarded General Electric Co., Schenectady, N.Y., to supply long lead-time reactor compartment components for the nuclear-powered guided missile destroyer (DLG-N) in the Navy's fiscal year-1959 shipbuilding program. Materials to be supplied under this contract which will be bought by GE from others on competitive bidding include such major items as steam generators, coolant pumps, reactor vessels and valves. GE, at the Knolls Atomic Power Laboratory (which it operates for the USAEC under contract), is designing and developing the prototype nuclear power plant for the DLG-N; for test purposes, work on the prototype is inside a 225-ft. steel sphere at KAPL's test site, W. Milton, N.Y. The laboratory is also designing and developing the twin-reactor propulsion system for the DLG-N.

Contract award by USAEC-Maritime Administration has been made to General Dynamics Corp., for development phase of Maritime Gas-Cooled Reactor (MGCR) propulsion system for a merchant ship. Eighteen firms bid on the job which includes development of high temperature fuel elements, reactor controls and compatible power generation machinery, and selection of coolant and moderator. (Design, construction and test operation of a prototype plant are contingent upon successful completion of the development work. Entire program is expected to take some 5-7 years.) Electric Boat, Groton, Conn., and General Atomic, San Diego, Calif., divisions of General Dynamics, will handle the work.

Contract to build high-level radiochemistry facility at Hanford Plutonium Works has been awarded by the USAEC to H. D. Bohna Co., San Francisco, Calif., on low bid of \$574,504.

Construction contracts recently awarded by the USAEC's Albuquerque office for work at Sandia Laboratory, Albuquerque, N.M., include contract to Robert E. McKee for new laboratory building there, on low bid of \$1,227,679 among five bidders. Another contract was given Underwood-Testman Co., to build high temperature environmental test facility; bid of \$469,508 was lowest of seven submitted.

NEW PRODUCTS, PROCESSES, INSTRUMENTS...for nuclear lab & plant...

NEW PRODUCTS FROM MANUFACTURERS:- New integral beta-gamma scintillation analyzer is designed specifically for the stable analytical measurement of isotopes emitting either gamma or hard beta rays or a mixture of both in solid or liquid samples. It is said to make possible, for the first time, scintillation well counting of certain hard betas with no source preparation required. --Baird Atomic, Inc., Cambridge 38, Mass.

New radiation warning signs, made of sheet aluminum, are in conformity with USAEC requirements for the posting of radiation areas. --Picker X-Ray Corp., White Plains, N.Y.

PRODUCT NEWS:- Foamed silica, trade-named Foamsil, is offered by Pittsburgh Corning Corp., Pittsburgh 22, Pa., for acid-resisting, insulating and refractory applications in nuclear energy, chemical, petroleum and other fields. It is available in blocks up to 3-in. thicknesses in 11" x 17" and 17" x 22" sizes, at an approximate cost of 50¢/board ft.

Recent growth in the use of tritium and a corresponding increase in tritium urinalyses has enabled a reduced price schedule for this service as offered by Tracerlab, Inc., Waltham 54, Mass. New price schedules are \$10 for a single analysis, and \$5 per sample on contract basis.

Clad nuclear fuel elements as designed and fabricated at present are too expensive for reactors to be economic, H. H. Hausner said at a recent talk on "Metallurgical Problems in Cladding Nuclear Fuel Elements" at the Technical University in Zurich. Dr. Hausner spoke on invitation of the Swiss Society for Materials Testing. To lower fuel cost and increase reactor economy new principles in the design of fuel elements must be developed, he stated.

Gamma radiation plus antibiotic treatment can result in meat staying fresher as much as three times as long as untreated meat, R. F. Cain and A. W. Anderson of Oregon Agricultural Experiment Station, and A. S. Malaspina of Chas. Pfizer & Sons, Brooklyn, told recent meeting of Institute of Food Technologists, in Chicago. Cooking destroys all antibiotic residue, the speakers stated.

EXPERIMENTAL DEVICES:- Work has started on a 20-inch 10 mev cyclotron at the University of California's Davis campus, with construction expected to take about two years. The machine will be used in nuclear physics studies of the physics department and in making radioisotopes for plant and animal research conducted on the Davis campus.

Experimental reactor to determine feasibility of nuclear power for rocket propulsion is now being disassembled at the USAEC's S. Albuquerque, N.M., Works in preparation for shipment to the Commission's Nevada test site near Las Vegas. It had originally been set up without nuclear components which will be added upon re-assembly at the test site. The reactor, known as KIWI-A, is part of Project Rover (nuclear rocket propulsion) and is one unit of this project which has been underway for about three years. The reactor shell and support equipment were designed and built at the South Albuquerque Works which is operated under USAEC contract by ACF Industries.

NEW IRRADIATION FACILITIES:- Irradiation space and experimental facilities in the 30,000 thermal kw test reactor General Electric Co., is building at its Vallecitos, Calif., atomic laboratory is to be made available on a commercial basis to other industrial, educational and research organizations. GE will market the reactor's facilities, after providing for the needs of its own atomic power equipment department, according to J. Emmett Maider, the department manager of marketing and project operation. Under construction since late 1957, the reactor is scheduled for completion and operation late this year. Total cost will be approximately \$4 million.

The 20,000 kw test reactor of Westinghouse Electric Co., at Waltz Mill, Pa., has now gone critical in the first of a series of tests at the Westinghouse Reactor Evaluation center there. When completed, the reactor will use highly enriched fuel, and water as moderator and coolant. Its test holes, for holding materials under irradiation, will afford a large degree of flexibility according to E. T. Morris, manager of the testing reactor.

New irradiation laboratory at the Barton Works (Manchester) of Metropolitan-Vickers (Great Britain) is offering irradiation service to industrial firms and organizations. A 4-mev linear accelerator, which can scan an area 12-in. x 3/4-in. has been designed and built by the company and is the main item of equipment of the laboratory. Food preservation; sterilization of pharmaceuticals and dressings; plastic processing; and curing of rubber; are fields of interest where the apparatus will be useful.

ATOMIC ENERGY PATENT DIGEST...

ISSUED JUNE 24, 1958 to GOVERNMENTAL ORGANIZATIONS:- (1) Tube flanging apparatus having spiral cam actuated flanging rollers. H. J. Bellarts, inventor. No. 2,840,136 assigned to USAEC. (2) Separation of inorganic salts from organic solutions. L. I. Katzin, J. C. Sullivan, inventors. No. 2,840,451 assigned to USAEC. (3) Recovery of uranium from pitchblende. A. E. Ruehle, inventor. No. 2,840,452 assigned to USAEC. (4) Method of separating fission products from fused bismuth-containing uranium. R. H. Wiswall, inventor. No. 2,840,464 assigned to USAEC. (5) Photographic film developer. F. G. Berry, inventor. No. 2,840,471 assigned to USAEC. (6) Inhibition of corrosion. J. E. Atherton, D. H. Gurinsky, inventors. No. 2,840,467 assigned to USAEC. (7) Refractory coating for graphite molds. S. D. Stoddard, inventor. No. 2,840,480 assigned to USAEC. (8) Reactor and novel method. G. J. Young, L. A. Ohlinger, inventors. No. 2,840,522 assigned to USAEC. (9) Loaded waveguides. L. B. Mullett, B. G. Loach, G. L. Adams, inventors. No. 2,840,788 assigned to USAEC.

ISSUED JULY 1, 1958 to PRIVATE ORGANIZATIONS AND/OR INDIVIDUALS:- (1) Radiation type flowmeter. D. F. Howard, inventor. No. 2,841,713 assigned to North American Aviation, Inc. (2) Radiation detection device. W. W. Schultz, inventor. No. 2,841,715 assigned to General Electric Co. (3) Dosimeter. T. A. Rich, inventor. No. 2,841,716 assigned to General Electric Co.

ISSUED JULY 1, 1958 to GOVERNMENTAL ORGANIZATIONS:- (1) Quick releasable drive. J. J. Dickson, inventor. No. 2,841,018 assigned to USAEC. (2) Nut screw mechanisms. J. A. F. Glass, inventor. No. 2,841,026 assigned to USAEC. (3) Uranium extraction. C. D. Harrington, J. V. Opie, inventors. No. 2,841,466 assigned to USAEC. (4) Precipitation method of separation of neptunium. L. B. Magnusson, inventor. No. 2,841,464 assigned to USAEC. (5) Recovery of uranium from solutions. R. R. Porter, inventor. No. 2,841,465 assigned to Union of South Africa, as represented by the Atomic Energy Board. (6) Method for recovery of mineral values from leached zone material. R. F. McCullough, inventor. No. 2,841,467 assigned to USAEC. (7) Recovery of uranium values from carbonate leach liquors. H. F. Wilson, inventor. No. 2,841,468 assigned to USAEC. (8) Plutonium carrier metathesis with organic reagent. S. G. Thompson, inventor. No. 2,841,469 assigned to USAEC. (9) Heat treatment of electroplated uranium. P. F. Hoglund, inventor. No. 2,841,539 assigned to USAEC. (10) Power reactor. W. H. Zinn, inventor. No. 2,841,545 assigned to USAEC. (11) Quantizing tube. A. S. Jensen, G. W. Gray, inventors. No. 2,841,727 assigned to USAEC.

NEW BOOKS & OTHER PUBLICATIONS...

Nuclear Radiation Detection. By William J. Price. Operating principles and applications of nuclear radiation detection devices. 382 pages. --McGraw-Hill Book Co., New York 36, N.Y. (\$9.00)

Safe Design & Use of Industrial Beta-Ray Sources. A guide toward safe design, manufacture, installation, use, maintenance and disposal of beta-ray sealed sources for industrial applications. National Bureau of Standards Handbook 66. 28 pages. --Superintendent of Documents, Wash. 25, D. C. (20¢)

Uranium and Thorium. By L. Grainger, U. K. Atomic Energy Authority. Metallurgy and industrial chemistry of uranium and thorium. Comprehensive account from raw material to use of uranium and thorium as nuclear fuels. 204 pages. --George Newnes, Ltd., London, Eng. (25s.)

The European Nuclear Energy Agency and the Eurochemic Company. Report of the OEEC council which led to establishment of the Nuclear Agency and the setting up of the first European joint undertaking: Eurochemic Co. Publication No. C(57)204. --OEEC Mission, Publications Office, 1346 Conn. Ave., N.W., Wash. 6, D. C. (\$2.00)

MANUFACTURERS' LITERATURE:- Specifications of a remote control stereomicroscope and remote control metallograph with remote relay systems for "hot" cell work are available on request from Bausch & Lomb Optical Co., Rochester, N.Y.

Technical bulletin N35 of Nucleonic Corp. of America, 196 Degraw St., Brooklyn 31, N.Y., covers that firm's equipment for all phases of nuclear development work.

Sincerely,

The Staff,
ATOMIC ENERGY NEWSLETTER

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